

**REMARKS**

Claims 1 through 6 are pending in this Application. Claim 1 has been amended for clarification consistent with the written description of the specification as, for example, the paragraph bridging pages 5 and 6 thereof. Applicant submits that the present Amendment does not generate any new matter issue.

**Claims 1 through 6 were rejected under 35 U.S.C. § 102 for lack of novelty as evidenced by Mori.**

In the statement of the rejection the Examiner asserted that Mori discloses methods corresponding to those claimed, and referred to column 5, lines 3 and 4, 18 through 22 and 36 through 38. This rejection is traversed as clearly factually erroneous.

The factual determination of lack of novelty under 35 U.S.C. § 102 requires the identical disclosure in a single reference of each element of a claimed invention such that the identically claimed invention is placed into the recognized position of one having ordinary skill in the art. *Dayco Prods., Inc. v. Total Containment, Inc.*, 329 F.3d 1358 (Fed. Cir. 2003); *Crown Operations International Ltd. v. Solutia Inc.*, 289 F.3d 1367, 62 USPQ2d 1917 (Fed. Cir. 2002). In imposing a rejection under 35 U.S.C. § 102 the Examiner is judicially required to specifically point out wherein an applied reference is perceived to identically disclose each and every feature of a claimed invention. *In re Rijckaert*, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993); *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984). That burden has not been discharged. Moreover, there are significant differences between the claimed methods

and the method disclosed by Mori that scotch the factual determination that Mori discloses any method corresponding to those claimed.

**Where is Mori's trench isolation?**

Each of independent claims 1, 3 and 5 is directed to a method comprising a sequence of manipulative steps, which steps include forming a trench in a semiconductor substrate and **filling the trench with an insulating film**. It is *not* apparent and the Examiner did not comply with the judicial mandate of specifically identifying wherein Mori discloses any method of forming a trench isolation. *In re Rijckaert, supra; Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., supra.*

Applicant, therefore, submits that Mori does not even disclose or suggest a method for forming a trench isolation structure in the first place. Rather, Mori merely discloses a method of patterning a gate electrode over a substrate. The column and lines of Mori cited by the Examiner, i.e., column 5, lines 3 through 5, indicate that the isolation region is **already formed prior** to the disclosed technique of patterning the gate electrode. Accordingly, Mori fails to disclose or suggest the concept of employing an antireflection coating, silicon nitride film and silicon oxide film as a mask to etch a semiconductor substrate to form a **trench** therein, let alone **filling the trench with an insulating film**.

**The separate patentability of each of independent claims 1, 3 and 5 is advocated.**

The Examiner is hereby requested to comply with the judicial mandate of **specifically identifying** wherein Mori discloses or suggests a method comprising reducing

the amount of oxygen atoms in an antireflection coating, notably the organic antireflection coating disclosed by Mori, to even attempt to arrive at the method specified in **claim 1**. *In re Rijckaert, supra; Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., supra.*

The Examiner is also requested to specifically identify, as judicially required, wherein Mori discloses or suggests a method comprising etching under conditions which achieve a higher etching rate in a flat portion of an upper surface of the antireflection coating than at a facet thereof, to even attempt to arrive at the method defined in **claim 3**. *In re Rijckaert, supra; Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., supra.*

The Examiner is also requested to specifically identify, as judicially required, wherein Mori discloses or suggests a method comprising etching to form a trench in the first place, let alone employing a gas having a reduction function, to even attempt to arrive at the method defined in claim 5. *In re Rijckaert, supra; Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., supra.*

It should, therefore, be apparent that, as a **factual matter**, Mori neither discloses nor suggests a method comprising etching an antireflection coating, a silicon nitride film and a silicon oxide film to form a mask and then using that mask to etch a semiconductor substrate to form a trench, let alone filling that trench, let alone etching under the conditions specified in independent claims 1, 3 and 5. This being the case, the Examiner failed to establish a *prima facie* based denied patentability to the method described in each of claims 1, 3 and 5.

**Mori teaches away from the claimed invention.**

Applicant points out that Mori actually **teaches away** from the claimed invention by etching the antireflection film using an oxygen-based gas in addition to a chlorine-based gas. This clear **teaching away** from the claimed invention not only undermines the factual determination of lack of novelty under 35 U.S.C. § 102 but constitutes strong evidence of **nonobviousness**. *In re Bell*, 991 F.2d 781, 26 USPQ2d 1529 (Fed. Cir. 1993); *Specialty Composites v. Cabot Corp.*, 845 F.2d 981, 6 USPQ2d 1601 (Fed. Cir. 1988); *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986); *In re Marshall*, 578 F.2d 301, 198 USPQ 344 (CCPA 1978).

**Summary**

Mori neither discloses nor suggests a method as defined in each of claims 1, 3 and 5. Indeed, Mori neither discloses nor suggests using a patterned mask of an antireflection coating, silicon nitride film and silicon oxide film to form a trench in a semiconductor substrate in the first place, let alone filling the trench with an insulating film, and certainly not etching under the conditions specified in claims 1, 3 and 5. These argued manipulative differences between the claimed methods and Mori's method undermine the factual determination that Mori discloses a method identically corresponding to those claimed. *Minnesota Mining & Manufacturing Co. v. Johnson & Johnson Orthopaedics Inc.*, 976 F.2d 1559, 24 USPQ2d 1321 (Fed. Cir. 1992); *Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986).

Applicant, therefore, submits that the imposed rejection of claims 1 through 6 under 35 U.S.C. § 102 for lack of novelty as evidenced by Mori is not factually viable and, hence, solicits withdrawal thereof.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT WILL & EMERY LLP

A handwritten signature in black ink, appearing to read 'Arthur J. Steiner', is written over the printed name.

Arthur J. Steiner  
Registration No. 26,106

600 13<sup>th</sup> Street, N.W.  
Washington, DC 20005-3096  
(202) 756-8000 AJS:as:ntb  
Facsimile: (202) 756-8087  
**Date: June 21, 2004**